



We acknowledge and respect the Ləkʷəŋən (Songhees and Esquimalt) Peoples on whose territory the university stands, and the Ləkʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day.

COURSE OUTLINE

Climate Change

Lecture meets Mon & Thurs 11:30-12:50 in Snéqə ʔéʔlən | Sngequ House (RSN) 131, Face-to-Face

Lab meets in Bob Wright Centre (BWC) B115, Face-to-Face

PREREQUISITES: None, but a Math 11 equivalent is expected.

COREQUISITES: None

CONTACT INFORMATION:

Instructor(s):	Ed Wiebe (lead)	Colin Goldblatt
Email:	ecwiebe@uvic.ca	czg@uvic.ca
Office:	BWC B125a	BWC A323
Office Hours:	After class in the lobby outside the classroom on days that we teach or make an appointment by e-mail for another time	
Lab Coordinator:	Ed Wiebe BWC B125a	eos130labs@uvic.ca
TAs:	Lab Section TAs and contact information are provided on Brightspace.	

COURSE DESCRIPTION

Our planet's climate is a dynamic system connected to all parts of the Earth System and to everything people need and do. It's never been more important to understand how it works and how it can change and be changed. Our goal is to give you a quantitative introduction to the climate system. You'll learn about the fundamental physical principles governing the climate of the Earth system, and its response to natural and anthropogenic factors. Climate change is a problem with no easy solutions. You'll learn about the impacts of change, and approaches to mitigation and adaptation, and climate policy.

This course can be part of the BSc in Climate Change.

LEARNING OUTCOMES

When you complete this course, you will be able to:

- describe and explain the fundamental physical science describing the Earth's climate system;
- understand how climate changes over time, and how human actions are changing the climate today;
- understand the impacts and risks associated with present-day climate change, and how these impacts affect human societies and the ecosystems on which they depend;
- examine and analyze climate data, in figures and tables, to form conclusions about what causes observed patterns and phenomena;
- correctly use calculations to quantify aspects of the climate system, including using units to express answers and convey concepts;
- create figures and tables of observations or calculations and use them to explain phenomena;
- understand approaches to dealing with the climate change crisis, including:
 - mitigation (steps to reduce human greenhouse gas emissions);
 - adaptation, resilience (learning to live with the changing climate);
 - energy transitions (moving from fossil fuels to carbon neutral fuels).
- work with diverse groups of people to formulate questions, perform experiments, and understand concepts; and
- effectively communicate your understanding in written assignments and exams.

COURSE MATERIALS

- Climate Change: The Science of Global Warming and our Energy Future. Mathez and Smerdon, 2018. Required. Available at the UVic bookstore.
- Lab Manual Spring 2025 edition. Required. Available at the UVic Bookstore. *Don't forget a 3-ring binder.*
- Calculator Any type that does not allow you to access the internet or store and retrieve information.
- Other lab materials Pencil, eraser, ruler, and coloured pencils.
- Brightspace <https://bright.uvic.ca/> Follow the link to "Spring 2025 EOS & GEOG 130 A01 X"
- Echo360 We will use Echo360 (free to UVic students) for polls in the large classroom. Click on the Echo360 Video Library link under Course Introduction on Brightspace to link your Echo360 with your Brightspace. Download the Echo360 app if you wish to use your phone or tablet for polls.

Recordings. Large classroom sessions in this course will be recorded to allow students who are ill to watch later. We will do our best to make these recordings, but they depend on the availability of the AV equipment and aren't a substitute for coming to class. Students who have questions or concerns regarding class recording and privacy may contact privacyinfo@uvic.ca. Auto-generated captioning is enabled for recordings in this course. Automated captioning is at best 70-90% accurate and will include errors depending on the subject matter, speaker, audio quality etc. Specialized terminology and proper names are prone to error. Refer to the audio feed for clarification. If you find offensive captioning, please tell your instructor.

EVALUATION

Student Assessment:

Midterm Exam	20%
Final Exam	35%
In-class participation (Echo360)	5%
Communications Project	10%
Lab Reports or Assignments	30%
Final Mark:	100%

Essential Course Requirements: At minimum, students must complete at least eight labs and the final exam to pass the course. Students who do not complete at least these requirements will be assigned an N in the course and a maximum grade of 49%. No supplemental examinations or additional work for extra marks are offered in this course.

Inclusion and Accessibility: The University of Victoria is committed to creating a learning experience that is as accessible as possible. If you anticipate or experience any barriers to learning in this course, please discuss your concerns with us. If you have a disability, a learning challenge, or chronic health condition, or think you may have one of these, we encourage you to meet with an advisor at the Centre for Accessible Learning (CAL) as early in the term as possible. You can find more information about CAL here: <https://www.uvic.ca/accessible-learning/index.php>

COURSE POLICIES

POLICY: CLASS CONDUCT

We expect you to attend every class and lab session unless you are ill (see attendance policy below). Please show respect to your classmates, TAs, and instructors even when we disagree. Use cell phones, tablets, and computers only to participate in class and for notetaking. Please do not go on social media or other websites during class. It affects your ability to learn as well as that of those around you. Please confine discussion with your neighbours to those times in the class specifically set aside for discussion. Please feel free to ask questions about the course content at any time.

POLICY: MISSED TESTS AND EXAMINATIONS

The only acceptable reasons to miss an exam are illness, injury, personal crisis, or sporting commitments as a UVic athlete. In some circumstances, we will ask you to provide supporting written documentation (e.g., a note from an official UVic coach). Students who miss the Midterm Exams for legitimate reasons (i.e., excused as above) will have the Final Exam count for 50% of their final grade and completed labs count for 35%. Travel plans are not a valid reason for missing a Midterm or the Final Exam, *even if the plans have been made and tickets purchased for you by family members without your knowledge*. The date for the EOS 130 Final Exam will not be known until the final exam schedule is posted in late February. The last day for final exams this semester is 25 April. You are safe to make travel arrangements for after that date.

Deferring Final Exam: All requests to take the Final Exam at a later time must be made through the Office of the Registrar on a *Request for Deferral* form.

POLICY: ATTENDANCE

Lecture: You are expected to attend every class, and your in-class participation is a graded component of the course. If you miss a class in the large classroom, you may earn back your Echo360 class participation grade by completing a 1-page essay on the reading for each class that you missed. This should be e-mailed to the Lead Instructor (Ed – ecwiebe@uvic.ca) within 1 week of the missed class (but ask Ed for an extension if you are still ill).

Labs: Labs will begin the week of 13 January. **If more than two labs are not completed (for any reason), you will receive an “N” for the course.** Attendance in labs is mandatory. Labs not completed are assigned a grade of zero. If you must be absent, contact the Lab Coordinator (eos130labs@uvic.ca) as soon as you know. If you are absent due to illness, injury, personal crisis, or UVic Athletics commitments, you *may* be able to attend an alternate lab section during the week of a lab or complete an assignment on your own to make up for the missed material, but this must be approved in advance by the Lab Coordinator. See the Lab Manual introduction for more details on the setup of the labs.

POLICY: ACADEMIC INTEGRITY

It is every student's responsibility to be aware of the university's policies on academic integrity, including policies on **cheating, plagiarism, unauthorized use of an editor, multiple submission, and aiding others to cheat**. Academic integrity requires commitment to the values of honesty, trust, fairness, respect, and responsibility. It is expected that students, faculty members, and staff at the University of Victoria, as members of an intellectual community, will adhere to these ethical values in all activities related to learning, teaching, research, and service. Any action that contravenes this standard, including inappropriate sharing of work, misrepresentation, falsification, or deception, undermines the intention and worth of scholarly work and violates the fundamental academic rights of members of our community. UVic has a policy on academic integrity that is designed to ensure that the university's standards are upheld in a fair and transparent fashion. Violations to the policy are considered serious offenses. You should read UVic's **Policy on Academic Integrity**:

web.uvic.ca/calendar/undergrad/info/regulations/academic-integrity.html If you have any questions or doubts, talk to your course instructor. For more information, see uvic.ca/learningandteaching/cac.

POLICY: USE OF AI

In this course you are not authorized to use any form of generative AI. Students should not make any use of generative AI tools, such as ChatGPT among others, that use AI for content generation. These tools, when used to generate content, interfere with learning to clearly express scientific arguments and are likely to be mistaken on many factual levels.

COURSE FEEDBACK

We value your feedback on this course. Please speak to us at any time during the term. Towards the end of term, as in all other courses at UVic, you will have the opportunity to complete an anonymous survey regarding your learning experience (CES). **The survey is vital for providing feedback** to us regarding the course and our teaching, as well as to help the department improve the overall program for students in the future. The survey is accessed online at <https://ces.uvic.ca/> and can be completed on your laptop, tablet, or mobile device. We will remind you and provide you with more detailed information nearer the time but please be thinking about this important activity during the course. You will also be asked separately to review the labs and your lab instructor.

MODULES

This class is organized into ten learning modules that each examine a specific set of questions or material. For each module, you will:

- 1) **prepare** by doing the assigned reading from the textbook (see the schedule in this outline),
- 2) **review** previous material that the module may depend on,
- 3) **learn** by attending and participating in two large classroom sessions,
- 4) **apply and practice** module concepts in more depth during the lab while preparing written answers to the lab questions and assignment.

TAKING NOTES

Note taking is a key ingredient for success in this class. The key figures presented in class are provided on Brightspace, but it is up to you to annotate these with text/meaning. Exam material may include figures, instructor commentary, discussions, calculations, and charts presented in classroom sessions and in the lab. Text readings prepare you for the classroom sessions, supplement the course material, and provide you with additional insight, in-depth explanations, and relevant illustrations, but are not a substitute for attending lectures.

EXAM INFORMATION

A final assessment stage consists of 1 midterm exams and a final exam that cover a combination of material presented in the readings, large classroom sessions, and labs for the modules being tested. The midterm exam will cover all material (classroom and lab) for the five complete modules before it (Modules 1–5). The final exam will concentrate on the last five modules (6–10) but will rely on material from the first half of the course. All exams will include multiple choice, short, and long answer questions. No notes, dictionaries, cell phones, or any electronic devices (except simple calculators) will be permitted during any exam.

UVIC IMPORTANT DATES

Last day to add courses: 22 January

Last day to drop a course without penalty of failure: 28 February

Final examinations begin: 7 April

Final examinations end: 25 April

See uvic.ca/calendar/dates/ for more details.

COMMUNICATIONS PROJECT

As a final project for EOS GEOG 130 you will write a short paper about climate change in an assigned region. The paper will be assessed in stages. You'll be asked to select a region, prepare an outline, and meet one-on-one with your TA to discuss your project, before submitting it shortly after the last day of classes. More details will be provided in class and on Brightspace.

CHANGES DUE TO UNFORESEEN CIRCUMSTANCES

The above schedule, policies, procedures, and assignments in this course are subject to change in the event of extenuating circumstances. In the event of significant changes, a revised outline will be posted/circulated.

COURSE WEEKLY CALENDAR

Day	DATE	Classroom	LAB	
M	06-Jan	Class Introduction 1– Climate pp 1–5	No Lab	
Th	09-Jan	1 – Climate		
M	13-Jan	2 – Radiation and Energy Balance Ch. 5	1 – Climate	
Th	16-Jan	2 – Radiation and Energy Balance		
M	20-Jan	3 – Forcing, Feedbacks, and Climate Sensitivity Ch. 6	2 – Energy Balance	
Th	23-Jan	3 – Forcing, Feedbacks, and Climate Sensitivity		
M	27-Jan	4 – The Carbon Cycle Ch. 4	3 – Forcing and Feedbacks	
Th	30-Jan	4 – The Carbon Cycle		
M	03-Feb	5 – Palaeoclimate Ch. 7	4 – Carbon Cycle	
Th	06-Feb	5 – Palaeoclimate		
M	10-Feb	6 – Observations Ch. 9	No Lab	
Th	13-Feb	Midterm Exam		
M	17-Feb	<i>Reading Break – No class or lab.</i>		
Th	20-Feb			
M	24-Feb	6 – Observations Ch. 10	5 - Evidence	
Th	27-Feb	7 – Impacts of Climate Change		
M	03-Mar	<i>Guest, Derek van der Kamp, Fires</i>	6 – Past Climates	
Th	06-Mar	7 – Models and Projections Ch.11		
M	10-Mar	8 – Climate Change Policy	7 - Impacts	
Th	13-Mar	<i>Guest, Rebecca Abernethy, Transport Policy</i>		
M	17-Mar	9 – Climate Risk Ch. 12	8 - Models	
Th	20-Mar	9 – Climate Risk		
M	24-Mar	8 - Mitigation Policies, Brief History of Climate Change Science and Politics	9 - Risk	
Th	27-Mar	8 – Long-Term Policy to Address Climate Change		
M	31-Mar	<i>Guest, Jeremy Caradonna, Local Government and climate change.</i>	10 - Communications	
Th	03-Apr	Summary, Discussion, and Review		

APPENDIX

SCHOOL OF EARTH AND OCEAN SCIENCES INFO

- SEOS Website: uvic.ca/seos
- SEOS Office: seos@uvic.ca
- SEOS Director: Dr. Jay Cullen, seosdirector@uvic.ca
- SEOS Mental Health & Wellness Contact: Dr. Andy Fraass, andyfraass@uvic.ca
- SEOS Undergraduate Advisor: Dr. Jon Husson, seosadvisor@uvic.ca
- SEOS Graduate Advisor: Dr. Roberta Hamme, seosgradadvisor@uvic.ca
- Ocean Science Mentor: Dr. Jody Klymak, seosoceansci@uvic.ca
- Climate Science Advisor: Dr. Colin Goldblatt, climateadvising@uvic.ca

UNIVERSITY STATEMENTS & POLICIES

- Academic Calendar: [Information for All Students](#)
- [Creating a respectful, inclusive, and productive learning environment](#)
- [Accommodation and Access for Students with Disabilities](#)
- [Student Conduct](#)
- [Non-academic Student Misconduct](#)
- [Accessibility](#)
- [Diversity / EDI](#)
- [Equity statement](#)
- [Sexualized Violence Prevention and Response](#)
- [Discrimination and Harassment Policy](#)

UVIC GRADING SYSTEM

As per the Academic Calendar:

Grade	Grade point value	Grade scale	Description
A+ A A-	9 8 7	90-100% 85-89% 80-84%	Exceptional, outstanding and excellent performance. Normally achieved by a minority of students. These grades indicate a student who is self-initiating, exceeds expectation and has an insightful grasp of the subject matter.
B+ B B-	6 5 4	77-79% 73-76% 70-72%	Very good, good and solid performance. Normally achieved by the largest number of students. These grades indicate a good grasp of the subject matter or excellent grasp in one area balanced with satisfactory grasp in the other area.
C+ C	3 2	65-69% 60-64%	Satisfactory, or minimally satisfactory. These grades indicate a satisfactory performance and knowledge of the subject matter.
D	1	50-59%	Marginal Performance. A student receiving this grade demonstrated a superficial grasp of the subject matter.
F	0	0-49%	Unsatisfactory performance. Wrote final examination and completed course requirements; no supplemental.
N	0	0-49%	Did not write examination or complete course requirements by the end of term or session; no supplemental.

STUDENT RESOURCES

POSITIVITY AND SAFETY

The University of Victoria is committed to promoting, providing, and protecting a positive and safe learning and working environment for all its members.

[Student Groups & Resources](#)

ACADEMIC RESOURCES

UVic Library - *UVic Library offers many services and resources for undergraduate and graduate students.*

uvic.ca/students/academics/library-services

Learning Resources - *UVic Learn Anywhere is the primary learning resource for students that offers many learning workshops and resources to help students with academics and learning strategies.*

onlineacademiccommunity.uvic.ca/LearnAnywhere/learning-strategies

Centre for Academic Communication - *Offers online and in-person one-on-one tutorials, workshops, and more.*

uvic.ca/learningandteaching/cac

Math & Stats Assistance Centre - *Offers drop-in, face-to-face tutoring and a friendly, collaborative study space for 100- and 200-level math and stats courses.*

uvic.ca/science/math-statistics/current-students/undergraduate/msac

MENTAL HEALTH & WELLNESS

A note to remind you to take care of yourself. Do your best to maintain a healthy lifestyle this semester by eating well, exercising, getting enough sleep, and taking some time to relax. This will help you achieve your goals and cope with stress. All of us benefit from support during times of struggle. You are not alone.

SEOS Mental Health & Wellness Contact - *Dr. Fraass is a faculty member who can act as a sympathetic ear and (more importantly) provide guidance about: how to access the multitude of University support services, and which are useful in different circumstances. Andy can be found by dropping by his office or lab (Bob Wright A431, B409). He is also available via email for questions or to arrange a time to have a chat. andyfraass@uvic.ca*

Student Wellness Centre - *Our team of practitioners offers a variety of services to support students' mental, physical, and spiritual health. uvic.ca/student-wellness*

Counselling Services - *Counselling Services can help you make the most of your university experience. They offer free professional, confidential, inclusive support to currently registered UVic students.*

uvic.ca/services/counselling/

Health Services - *University Health Services (UHS) provides a full-service primary health clinic for students and coordinates healthy student and campus initiatives. uvic.ca/services/health/*

ACCESSIBILITY

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a documented disability or health consideration that may require accommodations, please feel free to approach me and/or the Centre for Accessible Learning (CAL) as soon as possible.

Centre for Accessible Learning - The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course. uvic.ca/services/cal/

ADVISING

For academic advising-related questions, students in the School of Earth and Ocean Sciences are also encouraged to meet with the SEOS Undergraduate Advisor (seosadvisor@uvic.ca) as well as an academic advisor in the Academic Advising Centre early in their studies to help map out a plan to declare a major and complete university program requirements.

Academic Advising Centre - Academic advice and support is currently available by phone, email and virtual or in-person appointments. uvic.ca/services/advising

Ombudsperson - The ombuds office is an independent, impartial, and confidential resource for undergraduate and graduate students and other members of the University of Victoria community. The ombudsperson helps resolve student problems or disputes fairly. uvicombudsperson.ca

ACADEMIC CONCESSION

You can request an academic concession if your course requirements are affected by unexpected and unavoidable circumstances, or conflicting responsibilities. Concession requests can be for an in-course extension, deferral, withdrawal under extenuating circumstances, or an aegrotat. Please speak to an advisor at the Academic Advising Centre if you have questions on how requesting a concession will affect your academic program.

Undergraduate Academic Concessions - uvic.ca/students/academics/academic-concessions-accommodations

EQUITY AND HUMAN RIGHTS AT UVIC

EQHR is a resource for students, staff, and faculty who have experienced sexualized violence, discrimination, and/or harassment and are looking for informal and/or formal resolution options as well as advice, coaching, and/or education. We are available for confidential consultations so that you can ask questions and learn your options.

EQHR – By email at eqhr01@uvic.ca or in-person (Sedgewick C115). uvic.ca/equity

Sexualized Violence Resource Office – If you have been directly or indirectly impacted by sexualized violence, reach out to the SVRO for information, advice, resolution options (restorative and disciplinary) as well as support options and referrals. The SVRO is both survivor-centred and trauma-informed in their approach. You can reach us by phone at [250-721-8021](tel:250-721-8021) or by email at eqhr01@uvic.ca to book either an in-person (Sedgewick C119) or online appointment. uvic.ca/svp

RESOURCES FOR INTERNATIONAL STUDENTS

International Centre for Students - The primary office supporting international students on campus at the university-wide level. uvic.ca/international-experiences

UVic Global Community Initiative - Provides various supportive programming, including a Mentorship Program and Conversation Partner Program.

uvic.ca/international-experiences/get-involved/uvic-global-community

RESOURCES FOR INDIGENOUS STUDENTS

Indigenous Student Support - UVic offers holistic services to Indigenous students throughout their academic journey.

uvic.ca/students/info-for/indigenous-students

Elders in Residence - The Office of Indigenous Academic and Community Engagement (IACE) has the privilege of assembling a group of Elders from local communities to guide students, staff, faculty, and administration in Indigenous ways of knowing and being. uvic.ca/services/indigenous/students/programming/elders